

ABSTRACT OF THE DISCLOSURE

[58] An arrangement and method of measuring head-media spacing modulation (HMS_Wq) removes the portion of out-of-plane motion caused by disk modes from the dynamic measurements of hard disk surface topography. Employing time-domain measurement techniques, circumferential surface topographical measurements are made for a hard disk surface. A boundary wavelength is determined, and a first partial HMS_Wq value is determined based upon measurements taken at a first disk rotational speed. A second partial HMS_Wq value is determined based upon measurements taken at a second disk rotational speed. The first and second partial HMS_Wq values are combined to provide a complete and accurate HMS_Wq value, taking advantage of the principle that the disk mode location in the spatial domain topography spectrum converted from the measured time-domain data shifts when the disk rotation speed is changed during the measurement.